

EXHIBIT B

**CHANGE IS:
CHECKING IN BEFORE YOU PACK**
Check-in at delta.com



Learn Mo

Economist.com

SPECIAL REPORTS

CSI: credit crunch

Oct 18th 2007

From The Economist print edition

Central banks have played a starring role

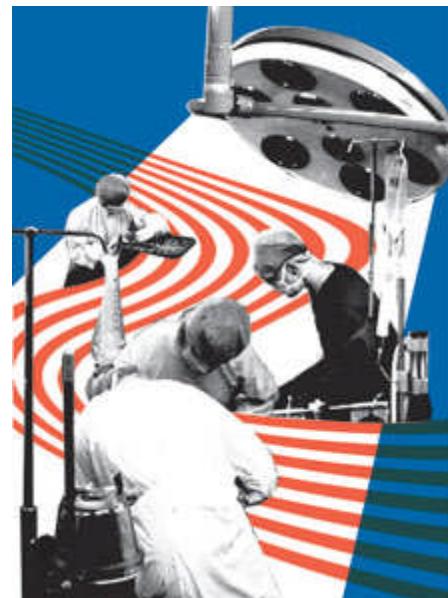
THE upheaval that began more than two months ago has been called not only a subprime crisis but also a banking crisis, a crisis of liquidity and a crisis of collateral. It has been each of those things, but most of all it has been a crisis of central banking.

The central banks were present at the creation, as asset prices inflated and credit markets hypertrophied. Between 1997 and 2006, according to the S&P/Case-Shiller national home-price index, American house prices rose by 124%. America's was not the frothiest housing market: in the same period prices in Britain went up by 194%, those in Spain by 180% and those in Ireland by 253%. What was peculiar to America was the ability of large numbers of subprime borrowers—those with poor credit records—to take out mortgages and buy homes, lured by cheap credit and the belief that house prices could only rise. By 2006 a fifth of all new mortgages were subprime. The interest rates on many of these were adjustable, unlike those on most American mortgages. Low "teaser" rates were charged for a while before higher, market-based rates kicked in.

Meanwhile, financial assets of all sorts, from credit-card receivables to companies' debt repayments, had been turned into securities that could be bought and sold. Mortgages—both subprime and mainstream—were no exception. Lenders no longer needed to keep loans on their books, but could sell bundles of them to banks and investment funds at home or abroad. Properly designed, these complicated instruments could be stamped "AAA" by helpful rating agencies. And, like any other security, they could be used as collateral by their buyers when raising loans. By divorcing lenders from the risk of default, securitisation reduced their incentives to look carefully at their borrowers: at times one side or the other, or both, descended to outright fraud. And no one, least of all financial regulators, could be quite sure who in the global financial system was on the hook for which risks.

Central banks were also caught up in the storm when it finally broke. For months central bankers had been giving warning that many risks in the financial system were underpriced. But they were ignored as the financial markets shrugged off one jitter after another. And when the crisis came, on August 9th, it struck in an entirely unexpected quarter. Overnight interbank rates in the euro zone had spiked to 4.6% on August 8th, having been close to 4% shortly before. The next day the European Central Bank (ECB) astonished the financial world by injecting €95 billion (\$131 billion)

Illustration by Dettmer Otto



into the money markets—more than it did after the attacks on September 11th 2001. Over the following weeks both the ECB and the Fed poured large amounts into the interbank markets.

The first crisis to test the new world of finance showed that markets are so interconnected and so global that the poison can spread across markets and continents with terrifying speed. After all, the interbank markets lie deep within the financial economy—the closest thing to central-bank money itself. It is a long way from the shabby hoardings of American subprime mortgages to the marbled halls of the European interbank market. It was as if the ambush of a few legionnaires in the forests of Germania had triggered a revolution in ancient Rome.

The moment of truth

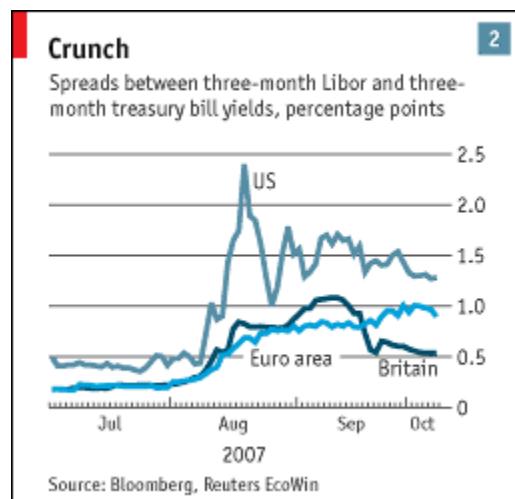
With hindsight, it is clear that the rot started when the teaser rates ran out and the American housing market slowed. Subprime defaults started to climb. In June Moody's, a rating agency, cut the ratings of 131 securities backed by subprime mortgages and said it was reviewing the grades of 136 others. Two hedge funds run by Bear Stearns, an investment bank, were found to have suffered huge losses on subprime-backed securities. More bad news made such securities increasingly hard to value and harder still to borrow against or sell. In August France's biggest bank, BNP Paribas, tightened the screws by suspending withdrawals from three investment funds, blaming "the complete evaporation of liquidity in certain market segments of the US securitisation market".

Eventually, the infection spread from managed funds to the banks' own books. It proved just as virulent in Europe as in America. Banks feared they would be on the line when their off-balance-sheet subsidiaries, known as conduits, found that they could not sell asset-backed commercial paper. The German authorities were forced to bail out IKB Deutsche Industriebank, a small lender.

In August the banks deserted each other. In particular, they raised three-month interbank rates, indicating their reluctance to lend to each other for anything but very short periods. The spread between those rates and the rate on government bills, a measure of the perceived riskiness of lending to other banks, rose in Europe—and especially sharply in America (see chart 2). Banks were reluctant to lend to each other because they did not know which counterparties might prove bad credit risks. Moreover, they had good cause to hoard their own cash, because they feared that they might have to rescue their own troubled conduits, or bring their subsidiaries' assets back on to their balance sheets.

Just as central banks had a hand in the events that led up to the crisis, so they have been intimately involved in clearing up the mess. The credit crunch presented central bankers with dual dilemmas, one for each of their two jobs. The first of these is to keep the financial system working smoothly by ensuring that the banking system has enough liquidity. If the system gets jammed, credit will become scarce and market interest rates will rise—and the economy may become jammed too. On the other hand, pumping in liquidity too eagerly may create moral hazard: if banks think that central banks will bail them out come what may, they will be more inclined to lend recklessly.

Central banks' second function is macroeconomic stabilisation, setting interest rates to keep inflation in check without causing the economy to stop and start. Because a credit squeeze raises market interest rates, it



will slow the economy down. On the other hand, if a central bank responds by cutting official interest rates too drastically, it may push up inflation, or cause expectations of future inflation to rise. The medium-term goal of price stability might be put at risk.

In seeking to resolve these dilemmas, central bankers have tried to keep their two tasks separate. That is a hard distinction to sustain. Although liquidity crises are short-term emergencies and macroeconomic stability is a medium-term goal, locked credit markets soon have wider economic effects.

In these days of collateralised-debt obligations and residential mortgage-backed securities, there is no textbook to tell central bankers exactly what to do when liquidity in the interbank market dries up. They can call on an ancient guide, in the shape of Walter Bagehot's book, "Lombard Street: A Description of the Money Market", published in 1873. Bagehot advised the Bank of England to lend freely to illiquid but solvent banks against good collateral, at a penal rate.

But Bagehot was writing long before today's sophisticated interbank market was shaped. Some economists have argued that this market makes his prescription obsolete: there is no need for a central bank to save a solvent but illiquid bank, they say, because the interbank market does the job instead. But what happens if the interbank market itself seizes up?

Different central banks dealt with the double dilemma in different ways. On the liquidity side, the Fed, the ECB and the Bank of England all said that they had no intention of bailing out irresponsible lenders. However, the Bank of England took a much sterner line than the ECB or the Fed.

In mid-August the Fed supplied enough liquidity to hold the effective federal funds rate, an overnight interbank rate, below its then target of 5.25%. It reduced the discount rate, at which banks finding themselves short of cash can, in the spirit of Bagehot, borrow from the central bank, and lengthened the term for which it would lend. Banks were reluctant to go to the discount window at first, but borrowing had picked up by mid-September as necessity outweighed stigma. The ECB also held several special tenders to pump liquidity into the euro area's system.

The Bank of England ended up in a muddle. At first it sat aloof, despite angry requests from banks to unblock the interbank market. Its governor, Mervyn King, set out his reasons in a paper sent to a parliamentary committee on September 12th. Providing greater short-term liquidity might ease the taking back of assets on to banks' balance sheets and hence bring down interbank rates. But it would also undermine the efficient pricing of risk by providing insurance, after the event, for risky behaviour. "That encourages excessive risk-taking," he wrote, "and sows the seeds of a future financial crisis." Liquidity should be provided only if withholding it would be so costly to the economy that the moral hazard could be ignored.

At that time, Mr King did not think that point had been reached, but added: "The path ahead is uncertain." And indeed the day after Mr King's memo reached MPs, it emerged that Northern Rock, a mortgage lender especially reliant on the money markets for its funding, would be granted an emergency line of credit by the central bank. But the news, far from reassuring anyone, sparked a run on Northern Rock, Britain's first bank run since the 1860s, and caused all manner of wild worries about the whole British banking system. The government managed to stop depositors queuing to withdraw their savings only by guaranteeing all their money.

On September 19th the Bank of England changed its mind about three-month money, saying that it would inject up to £10 billion (\$20 billion) into the market after all. Mr King made a good fist of explaining the central bank's actions before the parliamentary committee the next day. But the about-turn on three-month money made it look inconsistent, and the Northern Rock affair has damaged its public standing, even if the government and the Financial Services Authority, Britain's

banking supervisor, were also at fault.

The twists did not end there. When the Bank of England offered its funding to the market on September 26th, it had no bidders. You could call that a vindication of Mr King's original position: the money was not needed after all. By the time of the auction, three-month interbank rates had fallen back to well below the 6.75% set by the central bank. Then again, rates may have fallen partly because Mr King had made the offer. Or banks may have spurned the auction because they were afraid that the market might find out who had borrowed: if so, they clearly did not need it badly enough to risk shame. Perhaps some straitened banks found the money on better terms elsewhere. An ECB auction the same day shifted €50 billion of three-month money.

The lesson to be drawn from this is that moral hazard is hard to avoid once conditions get really tight. Ben Bernanke, the governor of the Fed, and Jean-Claude Trichet, his counterpart at the ECB, may have erred on the slack side, but at least they have looked consistent. Mr King's position of principle crumpled on impact.

The monetary-policy dilemma has so far proved less testing, at least for central banks that had looked likely to raise interest rates before the crisis broke. Mr Trichet had some explaining to do, having all but said in early August that the ECB would put rates up in September. But the uncertainty created by market turmoil gave him a good reason to wait while still stressing medium-term inflationary risks. In any case, rising interbank rates have in effect supplied the tightening that the ECB, the Bank of Canada and the Bank of England might have otherwise provided.

For the Fed, the dilemma is more acute. The weakening economy—especially a run of bad news from the housing market—made it easy for Mr Bernanke to justify a half-point cut in the fed funds rate, to 4.75%, on September 18th, even though markets had been ready to accept a quarter-point reduction. But it also makes it harder for Mr Bernanke to shake off the Fed's reputation for being quick to cut rates when markets are tumbling but slow to raise them when the economy picks up.

In 1998 turmoil in financial markets—including the collapse of Long-Term Capital Management, a hedge fund once thought too brainy to fail—helped persuade the Fed, then led by Mr Greenspan, into three quick rate cuts that contributed to the dotcom bubble. Equally, the Fed's slashing of rates in 2001-03 did much to fuel an already warming housing market.

These episodes gave rise to financial markets' belief in the "Greenspan put"—the notion that the central bank would always rescue tumbling markets. Mr Bernanke will be under great pressure to repeat the folly if investors and politicians clamour for more rate cuts. But he cannot afford to surrender the inflation-fighting credentials that his predecessors fought so hard to win.